REMARKS

Claim 33 has been canceled.

Claim 34 has been added, requiring the refractive index of the dielectric layer to be decreased, support for which exists throughout the present application, including for example page 14, lines 3-4.

Claims 1-21, 23-32 and 34 are currently pending, although claims 1-18, 31 and 32 have been withdrawn from consideration.

The Office Action also rejected claims 19-21, 24-27 and 29 under 35 U.S.C. §103 as obvious over U.S. patent 5,569,362 ("Lerbet") in view of U.S. patent 4,851,095 ("Scobey") and U.S. patent 4,851,095 ("Nakanishi") or U.S. patent 6,596,399 ("Verrasamy"), and claims 23, 28 and 30 under 35 U.S.C. §103 as obvious over Lerbet, Scobey, (Nakanishi or Verrasamy) and U.S. patent 4, 691,077 ("Gregory")(claim 23), U.S. patent 6,190,511 ("Wei")(claim 28) and U.S. patent 6,809,066 ("Reade")(claim 30). In view of the following comments, Applicants respectfully request reconsideration and withdrawal of these rejections.

The claimed invention relates to processes for depositing one or more layers on a substrate in a sputtering chamber comprising a sputtering system comprising a target, a linear ion source and a conveying system, comprising conveying the substrate through the sputtering chamber, depositing at least one dielectric thin-film layer on the substrate by sputtering with the sputtering system comprising the target, generating at least one ion beam coming from the ion source in the sputtering chamber in the presence of the sputtering system comprising the target, and adjusting the refractive index of said dielectric layer by modifying the angle between the ion beam and the surface of the substrate and/or modifying the voltage

applied to the ionic source, wherein the density of the dielectric layer deposited on the substrate is preserved.

The Office Action (at page 3) asserted that Lerbet teaches preserving the density of the dielectric layer. However, this is not the case. Lerbet teaches that both **density** and refractive index properties are **increased** as a result of Lerbet 's methods (See, col. 2, lines 49-51). So, Lerbet actually teaches away from preserving the density of the dielectric layer. In other words, one of ordinary skill in the art would not recognize, based on Lerbet 's disclosure, that refractive index could be modified without affecting density. In stark contrast, the present claims require density to be preserved. For at least this reason, Lerbet cannot teach or suggest the present invention and, in fact, actually teaches away from the present invention.

Furthermore, as recognized by the Office Action, Lerbet does not teach or suggest an ion beam created by a linear ion source or modifying the angle between the ion beam and the substrate and/or modifying the voltage applied to the ionic source. (Office Action at page 4). For at least this reason as well, Lerbet cannot teach or suggest the present invention.

Finally, with respect to new claim 34, Lerbet would not lead one of ordinary skill in the art to the belief that Lerbet 's processes could result in a **decrease** of the refractive index. Lerbet actually teaches away from this as discussed above, disclosing that the refractive index is increased. For at least this reason as well claim 34 is neither taught nor suggested by Lerbet.

As illustrated in Figure 2 of the present application, modifying the voltage applied to the ionic source can preserve the index of the at the value obtained without ion beam when the voltage applied is $\leq$ 500 V and increasing this voltage can adjust and decrease the index. Also, as illustrated in Figure 3, for an angle between the ion beam and the surface of the

substrate, the index of the layer can be adjusted (increased/decreased) by modification of the voltage applied to the ionic source. Also, Figure 3 demonstrates that this possible adjustment of the index is not the same if the angle between the ion beam and the surface of the substrate is not the same. Thus, the claimed methods requiring modification of the angle between the ion beam and the surface of the substrate and/or modification of the voltage applied to the ionic source yield unique products having unique properties. The applied art including Lerbet neither teaches nor suggests this invention.

More specifically, none of the applied art teaches, suggests, recognizes any benefits associated with, or would lead one of ordinary skill in the art to practice the claimed methods including modification of the angle between the ion beam and the surface of the substrate and/or modification of the voltage applied to the ionic source in the same sputtering chamber in the presence of the same sputtering system having the same target which allow the variation of the index of the layer without significant detriment to the mechanical or chemical characteristics of the stack (for example, density).

Scobey cannot compensate for Lerbet's fatal deficiencies and/or lead one of ordinary skill in the art to preserve density and/or decrease refractive index in direct contravention of Lerbet's disclosure. Scobey relates to a low energy process ("Typical operation is at 2 to 4 amps and 100 to 120 volts" -- col. 9, lines 17-18) which does not teach, suggest or recognize any benefits with modifying the angle between the ion beam and the surface of the substrate and/or modifying the voltage applied to the ionic source, let alone suggest modifying Lerbet in such a way as to preserve density and/or decrease refractive index in direct contravention of Lerbet's disclosure. Scobey does not recognize that the angle between ion beam and surface substrate or applied voltage applied are result effective variables, particularly with respect to achieving variation of the index of the layer without detriment to the mechanical or

chemical characteristics of the stack, so no motivation would have existed to optimize these variables to yield the claimed processes.

Nakanishi and Verrasamy are similarly deficient. It is only through hindsight, using the present application as a guide, that one skilled in the art would be led to practice the claimed processes employing the required modifying the angle between the ion beam and the surface of the substrate and/or modifying the voltage applied to the ionic source in the presence of the same sputtering system comprising the same target. Nothing in either of these references suggests modifying Lerbet in such a way as to preserve density and/or decrease refractive index in direct contravention of Lerbet's disclosure. Under such circumstances, the claimed methods cannot be obvious.

The tertiary references applied in the Office Action, Gregory, Wei and Reade, are cited merely for disclosure related to particular aspects of dependent claims and cannot compensate for Lerbet's and Scobey's deficiencies.

In view of all of the above, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. §103.

Applicants believe that the present application is in condition for allowance. Prompt and favorable consideration is earnestly solicited.

Respectfully submitted,

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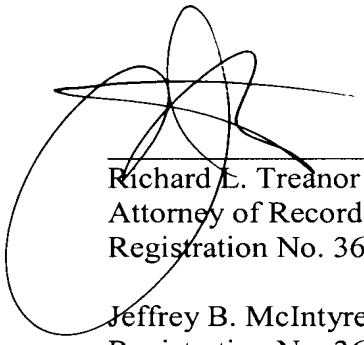

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